

PROCEEDINGS
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DESCRIPTION OF NEW FISHES OF BERMUDA.

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In February, 1912, the author visited Bermuda at the request of the Fishery Board. During his stay at the islands a number of species of fishes were obtained through Mr. L. L. Mowbray, who is now director of the Boston Aquarium. The recent collections of Mr. Mowbray have added 34 species of fishes to the Catalogue which I published in 1906 in Vol. VII, No. 2, Zoölogical Series, Field Columbian Museum, Publication 108, bringing the total number of known species at the present time to 296.

Some of the types of the new species are in the U. S. National Museum while others which are represented by only a single individual are in the Museum of the Bermuda Natural History Society.

Of the species believed to be undescribed, the account of one, *Emblemaria markii*, is contributed by Mr. Louis L. Mowbray. The entire list of additions to the fish fauna since the publication of the Catalogue of 1906 is as follows:

<i>Manta birostris</i>	<i>Scomberomorus maculatus</i>
<i>Ahlia</i> sp. nov.	<i>Ruvettus pretiosus</i>
<i>Lyrodontis</i> , resembling <i>retrilli</i>	<i>Decapterus sanctæ-helenæ</i>
<i>Channomuraena vittata</i>	<i>Pomatomus saltatrix</i>
<i>Muraena</i> sp. nov.	<i>Eucrotus ventralis</i>
<i>Sardinella pinnula</i>	<i>Pempheris mulleri</i>
<i>Lampanyctus crocodilus</i>	<i>Parasphyrænops atrimanus</i>
<i>Stolephorus viridis</i>	<i>Alphestes afer</i>
<i>Holocentrus puncticulatus</i>	<i>Anthias louisii</i>
<i>Holocentrus brachypterus</i>	<i>Lutianus hastingi</i>

<i>Iridio maculipinna</i>	<i>Lagocephalus pachycephalus</i>
<i>Pseudoscarus plumbeus</i>	<i>Pontinus microlepis</i>
<i>Cánthidermis sobaco</i>	<i>Cyclopterus lumpus</i>
<i>Cantherines pullus</i>	<i>Lophogobius cyprinoides</i>
<i>Alutera monoceros</i>	<i>Eleotris pisonis</i>
<i>Pseudomonacanthus amphioxus</i>	<i>Emblemaria markii</i>
<i>Cælorhynchus occa</i>	

Several unidentified species of Scopelidæ are in the collection made by Mr. Mowbray so that there are really about 300 species of fishes that have been recognized in Bermuda by naturalists.

***Sardinella pinnula* sp. nov.**

D. ii, 16; A. 16 (last two resembling finlets); V. 10; P. 16; scales 42. Head $4\frac{1}{2}$; depth 5; ventral scutes 19+16.

Head short; snout 3 in head; lower jaw little projecting; maxilla reaching to below front of eye, its width equal to $\frac{1}{2}$ its length; eye $3\frac{2}{3}$ in head; body slender, back straightish. Longest dorsal ray about $\frac{1}{2}$ head, last rays $\frac{1}{2}$ eye; ventral origin under 10th ray of dorsal, midway from tip of snout to caudal base, length of fin $2\frac{2}{3}$ in head. Scales very solid, striate; serrations of belly not strong. Anal base as long as head without snout, the last two rays produced and resembling finlets. Tongue and palate with small teeth; vomer toothless. Gillrakers long and numerous.

Steel blue above, silvery below, iridescent. Head, in spirits with golden tints; no opercular spot.

This species is called the "Anchovy" at Hamilton, Bermuda. Numerous specimens were taken by Mr. L. L. Mowbray, February 17, 1912. The types of the species, $3\frac{3}{4}$ to $5\frac{1}{2}$ inches long, are in the U. S. National Museum. No. 74,086.

***Stolephorus viridis* sp. nov.**

"GREEN FRY."

D. 12; A. 15-16; scales 42.

Head 4; depth $5\frac{1}{3}$; eye 3 in head; snout slightly shorter than eye; jaws nearly equal or the lower slightly projecting; snout pointed. Top of head without keel, but with a network of pores which is continued upon and across the nape in a broad band. Maxillary with a few very small, weak teeth; mandible also with weak teeth. The maxillary extends to below front of pupil, its posterior end blunt pointed; gillrakers numerous. Pectoral equal to head without snout, not reaching nearly to ventrals; ventrals midway between caudal base and front of eye, equal to length of snout and eye; insertion of anal far behind end of dorsal, the fin short; origin of dorsal a little nearer to tip of snout than to caudal base, the second dorsal ray $\frac{2}{3}$ length of head.

Color pale brown; the silvery lateral band about as wide as the short diameter of the eye; a series of about 9 pearly minute spots each surrounded by a narrow ring of dark brown on the throat in front of the root of the ventrals. These are probably phosphorescent in life, and possibly also the lace-like sculpture on the top of the head. Color in life greenish. The body in life is covered with mucus.

In November, 1910, Mr. L. L. Mowbray observed many individuals of this species on North Rock ledge. The same Fry was exceedingly common around some of the islands near the entrance to Hamilton Harbor in February, 1912.

Types, from 2 to $2\frac{1}{4}$ inches long, in U. S. National Museum. No. 74,084.

Eucrotus gen. nov., *Stromateidae* or *Icosteidae*.

Body short ovate, deep, strongly compressed, covered with small cycloid scales; scales extending upon the dorsal. Head moderate, the interorbital space broad. Eye moderate, snout short, obtuse, truncate; margin of preopercle with flexible spines; lower margin of subopercle and part of opercle finely serrate. Mouth moderate, oblique, with one row of small teeth in the jaws; vomer and palate toothless. Gill openings wide; gillrakers moderate, close set. * One dorsal, high, with a few flexible spines in front, beginning over hind margin of eye, its rays numerous. Anal high and long; caudal round; base of vertical fins closely compressed, with scales extending well upon them; ventrals large, I, 5. Branchiostegals 7; pseudobranchiae present, small. Skeleton soft. Pelagic.

Eucrotus ventralis sp. nov.

D. VII, 34; A. II, 24; V. I, 5; pores in lateral line 106.

Depth of body $\frac{1}{2}$ the distance from front of pupil to base of caudal. Eye slightly longer than snout, $3\frac{1}{2}$ in head. Head 3 in total to caudal base. Mouth moderate, oblique, jaws equal, maxilla reaching to below middle of eye. Interorbital width 3 in head. Dorsal spines graduated, the first short, inserted over hind margin of preopercle, the seventh $2\frac{2}{3}$ in head. The pectoral reaches to below base of 14th dorsal ray; ventral as long as pectoral, $1\frac{1}{3}$ in head, extending to anal origin. Anal origin midway between tip of snout and base of caudal, the longest ray $\frac{2}{3}$ head. Nostrils in front of middle of eye, posterior one much the larger.

Color, grayish silvery with numerous dark spots and blotches. Four short, narrow, dark bands on top of head, the first one behind premaxilla. Many mucus pores on head.

A single example, $5\frac{1}{4}$ inches long, was taken by Louis L. Mowbray, August, 1911, in floating Sargassum in Eastern Channel, Bermuda. The specimen is in the Museum of the Bermuda Natural History Society.

PARASPHYRÆNOPS gen. nov., *Cheilodipteridae*.Allied to *Scombrops*.

Body elongate, covered with small, ctenoid scales. Snout and top of head naked. Opercles scaly. Nostrils double, the posterior the larger. Operculum with two feeble, flat spines, the upper one the larger. Teeth in jaws uniserial, feeble, no canines, vomer and palate with a few weak teeth. Margin of preopercle serrate, the serrations slightly stronger at the angle. Eye large. Maxilla short, little expanded, slipping under the preorbital. Dorsals continuous, deeply notched, with 9 spines and 10 rays, the third spine high, the first and last two short. Anal base short, the fin having 3 spines and 7 rays. Caudal forked. Ventrals under base of pectorals, moderate, with 1 spine and 5 rays. Pectorals broad at base, not elongate, with many rays. Branchiostegals 7. Gillrakers numerous, long and slender, close set. Vertical fins scaleless.

Parasphyrænops atrimanus sp. nov.

Head $3\frac{1}{4}$; depth 5; eye $3\frac{1}{2}$ in head. D. IX, 10; A. III, 7; V. 1, 5; P. 18; scales about 70.

Mouth moderate, oblique, the maxilla extending to below middle of eye, the lower jaw slightly projecting. Suborbital depth $\frac{1}{2}$ diameter of eye.

Third dorsal spine longest, $\frac{2}{3}$ head, about equal to base of soft dorsal. Pectoral about $\frac{2}{3}$ head. Ventral $\frac{1}{2}$ head, inserted under pectoral. Anal spines graduated, the first very small, the third longest, $2\frac{1}{2}$ in head; base of fin $\frac{1}{2}$ head.

A large black blotch on base of spinous dorsal extending upward a distance equal to long diameter of eye. A jet black spot behind base of pectoral. General color, in spirits, brownish.

An individual 4 inches long was taken from the stomach of a Bonito (*Seriola falcata*) on Argus Bank, 43 fathoms, January 14, 1909, by L. L. Mowbray. A second example, $3\frac{1}{4}$ inches long, was also obtained by him on the same date and in the same way. The larger type is in the U. S. National Museum. No. 74,085.

Anthias louisi sp. nov.

An *Anthias* belonging to the group containing *formosus* Boulenger.

D. X, 15; A. III, 7; scales 4-35-15; pores 33.

Head 3; depth $2\frac{2}{3}$; eye 3 in head; snout 6 in head. The maxilla reaches nearly to below middle of eye; the ventral nearly to vent; the pectoral to the perpendicular through anal origin.

First anal spine $\frac{1}{2}$ eye; second anal spine $\frac{1}{2}$ head; longest anal ray 5 in total length without caudal. Caudal crescentic, none of its rays much produced. No rays in any of the fins produced.

Gillrakers 29, the longest $\frac{2}{3}$ eye.

A small black spot at base of 6th and 7th dorsal rays.

Color in life rosy.

A single individual, $3\frac{1}{4}$ inches long to base of caudal, was obtained by

L. L. Mowbray on Argus bank, April 6, 1908, from the stomach of a rock fish. It is in the Museum of the Bermuda Natural History Society.

This species is named for Louis Septème Mowbray, the youngest ichthyologist of my acquaintance.

Pseudoscarus plumbeus sp. nov.

The type specimens of this parrot fish are in the Museum of the Bermuda Natural History Society. Length of types, 16 inches and 18 inches. The specimens described were collected by L. L. Mowbray on the North Shore, within the reefs, August, 1911. The species was first obtained here in 1909.

Head 3; depth $2\frac{2}{3}$; eye 4 in snout (obliquely), $8\frac{1}{2}$ in head; snout $2\frac{1}{4}$; interorbital width $2\frac{2}{3}$; preorbital 4; pectoral $1\frac{1}{2}$; ventral $1\frac{1}{2}$; caudal $1\frac{1}{2}$.

D. IX, 10; A. II, 10; scales 2-25-6.

No canine teeth; lower jaw included when mouth is closed; lateral line interrupted one scale behind end of soft dorsal, lower branch beginning under 9th ray of dorsal, piercing 7 scales; pores of lateral line much branched. Six scales on nape in front of dorsal, the third one much the largest; 3 rows of scales on cheeks, the lower row containing only one scale; 18 scales along base of dorsals forming a somewhat conspicuous sheath for the fins; 11 scales along anal base also forming a low sheath. Outer caudal rays somewhat produced; inner rays with a convex outline.

Color purplish brown in life; chin, upper lip and lower part of opercle and subopercle vivid, greenish blue becoming emerald green in spirits; nape with bluish green; a spot of bluish green at insertion of first dorsal; a few scales on sides with similar green; margin of dorsal and anal, tips of caudal, upper ray of pectoral and first ray of ventral with a narrow stripe of bluish green.

Pontinus microlepis sp. nov.

A *Pontinus* related to *P. beanorum* and *P. macrolepis*, differing from these in its small scales and other characters, was obtained by Mr. L. L. Mowbray in Bermuda several years ago.

The length of the single individual taken is nine inches; depth two and one-fourth inches; head three and one-half inches.

D. XII, 10; A. III, 5; P. 17; V. I, 5; scales 7-48-14 (pores about 33).

Head $2\frac{1}{2}$; depth $3\frac{1}{3}$; eye $4\frac{2}{3}$; snout $3\frac{1}{2}$.

The maxilla reaches almost to below hind margin of eye. Mandible slightly projecting, with a slight knob closing into an interspace between the intermaxillaries. Interorbital width 3 in snout. Top of snout and top of head with a few weak scales; rest of head scaly; maxilla naked.

Base of pectoral as wide as the eye is long, 7th and 8th rays from bottom the longest, $3\frac{1}{2}$ in length to caudal base, extending to below 11th spine of dorsal, and midway between vent and anal origin.

The ventral reaches nearly to vent, $\frac{1}{2}$ as long as head. Fourth dorsal spine longest, equal to snout; 1st spine 2 in snout; 11th slightly longer

than 1st; 12th as long as the eye. Longest dorsal ray 3 in head. Longest anal ray $2\frac{1}{2}$ in head. First anal spine $\frac{1}{2}$ eye; second spine equal to snout; third $\frac{3}{4}$ snout.

Two slender tentacles above each eye, the first minute, the second about $\frac{2}{3}$ eye. A small tentacle at each anterior nostril.

The lower caudal lobe is now slightly the longer. Only 6 gillrakers fully developed with about 8 little tubercles below on the anterior arch. None of the cephalic spines greatly developed. Color rosy.

The type of the species will be in the U. S. National Museum.

Emblemaria markii Mowbray sp. nov.

"Head $3\frac{2}{3}$; depth $5\frac{1}{8}$; D. XXII, 15; A. 25.

"Body blenniform, scaleless. Jaws with strong incurved conical teeth; maxillary reaching beyond the eye a distance equal to diameter of eye, which is about 4 in head. Snout moderately compressed, slightly less than 4 in head; nasal cirrus equal to diameter of eye; cirrus on upper part of eyeball 2 in head, its tip sometimes branched; a small horn-like cirrus over and in line of posterior margin of eye. Dorsal and anal slightly joined to base of caudal; origin of dorsal beginning behind snout at a distance equal to length of second dorsal spine. In the male the 6th, 7th and 8th dorsal spines are the longest, 3 in total without caudal; in the female the longest dorsal spine is about 6 in length without caudal, and equal to depth of body.

"Color pale brown, with 6 to 10 dark vertical bands on the body; vertical fins dusky; dorsal quite dark, blotched with black; pectorals pale.

"Individuals of 1 to $2\frac{1}{2}$ inches long are common among the mussel beds (*Arca noe*) in Hamilton Harbor, Bermuda. First taken June 20, 1907, in a mussel dredge.

"Named in honor of Dr. E. L. Mark, of Harvard University."

Types in the U. S. National Museum. No. 74,083.